

REMARKS

The necessary new drawing of Fig. 2 is submitted herewith, with appropriate legends applied.

Claims 12 and 13 have been amended to take care of the rejection under 35 USC §101.

The claims have been amended so as to make it plain that what we are determining is the type of the bottom of the body of water.

This enables us to classify the bottom into a variety of types, such as sediment, course grained sand, etc. See page 1, lines 7-9 of the present application and the object recited on page 2 and 5 of our specification.

As mentioned on page 10, lines 5-8, this requires information that may be obtained by calibration with known bottom types. See also Figure 6, wherein different symbols show different bottom types.

Our claim 1 requires a search unit with information that associates different combinations of the results of *reflection* measurements and *scattering* measurements with bottom types. These are different types of measurement: reflection requires strict relations between the angles of incidence and reception (usually vertically under a ship). Scattering imposes no strict angle requirements. Our invention proposes to provide

a search unit with information to associate different bottom types with combinations of such measurements.

Reconsideration is accordingly respectfully requested, for the rejection of the claims as anticipated by or unpatentable over GRANDE et al. US 5,568,450, alone or in combination with U.S. published Appln. 2003/0206489.

GRANDE et al. is at best tangentially related to this. GRANDE et al. primarily discuss handling of *reverberation* due to repeated reflection on the sea bottom and the sea surface. GRANDE et al. disclose that "bottom parameters" can be extracted from reverberation. It appears that this refers to the final box of Figure 1 of GRANDE et al. As can be understood from the explanation in column 10, lines 25-29 of GRANDE et al., these "bottom parameters" are bottom scattering coefficient and loss, not bottom type. Determination of this kind of bottom parameters could be identified with the first and second attributes of our claim 1, but not with the subsequent determination of bottom type of claim 1.

Point 5 of the Office Action makes a '102 objection against claims 1-6 and 8-20 based on US 5,568,450 (GRANDE et al.). The Office Action refers to the abstract, claim 1 and claim 8 of GRANDE et al., stating that GRANDE et al. measure the strength of acoustic waves reflected from the seabed and perform a scattering experiment.

Thus GRANDE et al. does not relate to the search unit of our claim 1 at all. Upon inspecting the cited parts of GRANDE et al., the closest we can find is that GRANDE et al. mention "extracting bottom parameters by comparing said reverberation energy envelope with said reference reverberation model" (claim 1, column 18, lines 1-4).

Conceivably, the Office Action identifies the "bottom parameters" of GRANDE et al. with the bottom type of our claim 1 and the search unit with some unspecified part of GRANDE et al. that determines the bottom type. However, please note that determination of essentially continuous parameters as described by GRANDE is different from *classification* into discrete classes that correspond to bottom types. At least for this reason, the subject matter of claim 1 is not disclosed by GRANDE et al.

Moreover, it appears that the "bottom parameters" of GRANDE et al. merely refers to reflection and scattering parameters and not to bottom type classification (into bottom types such as sediment, coarse grained sand, etc., see page 1, lines 7-9 of our application and the object on page 2, line 5). The "extraction of bottom parameters" that is recited in claim 1 of GRANDE et al. refers to the final "extracting bottom parameters task 38" of Figure 1 of GRANDE et al. As specified in col. 10, lines 25-29 of GRANDE et al., this task derives values for bottom scattering and loss, i.e., acoustic properties. Thus, the determination of bottom parameters of GRANDE et al. is not a

classification into bottom type, but merely a measurement of acoustic properties of the bottom. Therefore, the "bottom parameters" of GRANDE et al. can at best be identified with the "attributes" of our claim 1 and not with the bottom types of that claim. Nor can any element of GRANDE et al. that computes bottom scattering and loss be identified with the search unit required by our claim 1.

Furthermore, it should be noted that GRANDE et al. cannot be read onto our claim 1 because our claim 1 requires measurement of reflection and scattering features, followed by classification using those measurement. GRANDE et al. discloses measurement of reverberation features, which are not specific to scattering or reflection, finally followed by extraction of what might be argued to be scattering and reflection parameters (scattering coefficient and loss). The least artificial identification with claim 1 would be to identify the final step of Figure 1 of GRANDE et al. with the measurement of reflection and scattering features of claim 1, in which case GRANDE et al. would disclose no classification step. However, if it were attempted to identify the final extraction step of Figure 1 of GRANDE et al. with the classification step of our claim 1, then none of the preceding reverberation measurements of GRANDE et al. can be identified with the specific measurements of reflection and scattering attributes of our claim 1.

In view of this, the '102 observations about the dependent claims are moot points. Similarly, the '103 objection of dependent claim 7 (point 7 of the Office Action) is a moot point. However, it may be noted that our claim 2 requires normalizing the scattered and reflected signal measurements. The Office Action refers to column 9, lines 48-52, which merely refers to normalizing scattered signals.

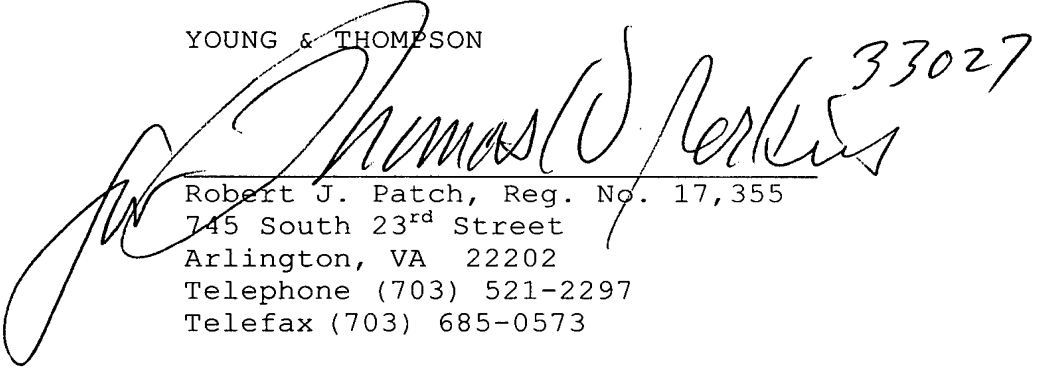
The same arguments apply to the other independent claims. GRANDE et al. simply do not disclose a search unit that associates bottom types with combinations of reflection and scattering features.

As the claims as amended clearly bring out these distinctions with ample particularity, it is believed that they are all patentable, and reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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APPENDIX:

The Appendix includes the following item(s):

- a Replacement Sheet for Figure 2 of the drawings